Attorney Docket No. 042390.P11892

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Patent Application of:

Robert A. Dunstan

Serial No. 09/966,944

Filed: September 27, 2001

For: **METHOD AND APPARATUS TO REMOTELY OBTAIN DEVICE CHARACTERISTICS FOR SIMPLE DEVICES**

Examiner: Nghi V. Tran

Art Unit: 2151

37 C.F.R. 1.131 DECLARATION

I, Robert A. Dunstan, began working on the Method And Apparatus To Remotely Obtain Device Characteristics For Simple Devices invention prior to November 21, 2000. On November 21, 2000, I submitted an Intel Invention Disclosure form to my employer, Intel, Inc. (please find the attached copy of the submitted disclosure form). After having the disclosure reviewed and selected for patenting, the disclosure was submitted to the Intel Patent Database Group on November 27, 2000 (see received stamp on the disclosure form on page 1). After reviewing the disclosure, the Patent Database Group opened a file and forwarded the file, including the disclosure form, for distribution to a responsible partner of Blakely, Sokoloff, Taylor and Zafman, LLP later in 2001. The application was then assigned to Steven Laut, the attorney of record. Steven Laut worked with me and submitted a first draft of the patent application, which was mailed to me on September 19, 2001 (see attached letter). I made amendments to the first draft and submitted those to Steve Laut on September 21, 2001 (see attached email). Steve Laut made amendments and emailed the second draft to me on September 21, 2001 (see the attached email). The application was forwarded to Intel's Quality Review attorney on September 19, 2001. The application was approved and was filed on September 27, 2001. I was diligent in

filing the application. As of the date the disclosure (November 21, 2000) was submitted to Intel (the assignee), and by the time the application was filed, I was not aware of U.S. Patent Pub. No. 2001/0033554, which was filed February 15, 2001, and published October 25, 2001, which was after the filing date of the current application. Further, as of the date the disclosure (November 21, 2000) was submitted to Intel (the assignee), and by the time the application was filed, I was not aware of U.S. Patent Pub. No. 2002/0078161, which was filed December 19, 2000, and published June 20, 2002, which was after the filing date of the current application. My conception of invention asserted in this application was completed before the time the disclosure document was submitted to Intel, Inc. on November 21, 2000. I submit all of the above facts and statements are true.

9/12/2006

Date   Robert A. Dunstan

(Note: accidentally disclosed to Microsoft 11/22/00)

16997

INTEL INVENTION DISCLOSURE
ATTORNEY-CLIENT PRIVILEGED COMMUNICATION
located at http://legal.intel.com

DATE: __11/21/00__   *SOFTWARE/INTERNET/IAG/TRL/CEL*
COMM.

It is important to provide accurate and detailed information on this form. The information will be used to evaluate your invention for possible filing as a patent application. When completed and signed, please return this form to the **Legal Department at JF3-147. You can submit electronically via e-mail to "invention disclosure submission" if all of the information is electronic, including drawings and supervisor approval.** If you have any questions, please call **264-0444.**

1. Inventor: __Dunstan__   __Robert__   __A__
    _____Last Name_____   _____First Name_____   __Middle Initial__
    Phone __503 264-7989__   M/S: __JF1-273__   Fax # __503 264-1805__
    Citizenship: __USA__   WWID: __10064337__   Contractor: YES _____   NO __X__
    Inventor E-Mail Address: __robert.dunstan@intel.com__
    Home Address: __53489 NW Wilson School Road__
    City: __Forest Grove__   State: __OR__   Zip __97116__   Country: __USA__
    *Corporate Level Group (e.g. IAG, NCG, NBG) __IAG__   Division __TRL__   Subdivision __CEL__
    Supervisor* __Andy Crump__   WWID: __10039730__   Phone: __503 264-2249__   M/S: __JF1-273__

    Inventor: _____   _____   _____
    _____Last Name_____   _____First Name_____   __Middle Initial__
    Phone _____   M/S: _____   Fax # _____
    Citizenship: _____   WWID: _____   Contractor: YES _____   NO _____
    Inventor E-Mail Address: _____
    Home Address: _____
    City _____   State _____   Zip _____   Country _____
    *Corporate Level Group (e.g. IAG, NCG, NBG) _____   Division __TRL__   Subdivision _____
    Supervisor* _____   WWID _____   Phone _____   M/S: _____

*If you are unsure of this information, please discuss with your manager.

(PROVIDE SAME INFORMATION AS ABOVE FOR EACH ADDITIONAL INVENTOR)

2. Title of Invention: __Method and algorithm to remotely obtain device characteristics for simple devices__

3. What technology/product/process (code name) does it relate to (be specific if you can):
    Low cost __devices/silicon that connect to simple buses such as X-10, CE Bus etc.__

4. Include several key words to describe the technology area of the invention in addition to # 3 above: _____

5. Stage of development (i.e. % complete, simulations done, test chips if any, etc.): __concept__

RECEIVED

NOV 2 7 2000

~~PATENT DATABASE GROUP~~
~~INTEL LEGAL TEAM~~

6. (a) Has a description of your invention been, or will it shortly be, published outside Intel:

    NO: __X__   YES: _____   If YES, was the manuscript submitted for pre-publication approval? _____

    IDENTIFY THE PUBLICATION AND THE DATE PUBLISHED: _____

    (b) Has your invention been used/sold or planned to be used/sold by Intel or others?

    NO: __X__   YES: _____   DATE WAS OR WILL BE SOLD: _____

(c) Does this invention relate to technology that is or will be covered by a SIG (special interest group)/standard/ or specification?

NO: X _____ YES: _____ Name of SIG/Standard/Specification: _____

(d) If the invention is embodied in a semiconductor device, actual or anticipated date of tapeout? _____

(e) If the invention is software, actual or anticipated date of any beta tests outside Intel: _____

7. Was the invention conceived or constructed in collaboration with anyone other than an Intel blue badge employee or in performance of a project involving entities other than Intel, e.g. government, other companies, universities or consortia? NO: X ____ YES: ____ Name of individual or entity: _____

8. Is this invention related to any other invention disclosure that you have recently submitted? If so, please give the title and inventors: No _____

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PLEASE READ AND FOLLOW THE DIRECTIONS ON
HOW TO WRITE A DESCRIPTION OF YOUR INVENTION

Please attach a description of the invention to this form and include the following information:

1. **Describe in detail what the components of the invention are and how the invention works.**

This invention describes an uncomplicated method for simple devices to report their capabilities. The result is an effective way for them to provide a complete description of their behavior. Another class of device (often referred to as a host) can take advantage of this information to control these simple devices. This invention also provides a mechanism that allows the device manufacturer or supplier to provide the most up to date information about their device because the host can always access the latest information about the simple device including bug fixes and updates.

The invention assumes a system with one or more devices residing on one or more communications busses with one or more bridges that eventually provide access to the internet (or intranet). There is a web server that is available to serve up device specific information. The invention assumes there is a simple bus specific mechanism that allows each device on that bus to return some device specific information on the bus to the host of the bus or the host of some parent bus. The mechanism may be one where devices broadcast the information or may be one where a device responds when polled by the host. The invention specifically calls for the information to include an URL that points to a page on a website provided by the device's manufacturer containing the descriptor for the device. The URL points to the configuration information for that specific device and may also contain other device specific information including firmware, new functionality etc. Note that instead of an URL, an IP address or other locator that can be translated by the host to get device specific information across the internet could be used.

There are currently methods in use to identify devices, busses and to associate specific device characteristics in order to control the device. Most of these methods have drawbacks such as being overly complex, too expensive, too power hungry, or at the other end of the spectrum are devoid of sufficient device descriptions to allow unattended and user independent operation (e.g. no drivers on disk or CD).

One example of discovery, command and control protocol is UPnP that requires every client device to support a TCP/IP stack, a DHCP client and a web server. It is a very complete and complex solution that allows a wide range of devices to be uniquely addressed and provide a standard mechanism to get class specific command and control information. However it is costly. One estimate calls for 64K RAM, 128K flash and $20-30 just for the hardware to support UPnP. In the case where the device is already net enabled, the incremental cost is relatively low. But

for most devices that are less complex, the incremental cost burden to add this level of functionality is out of reach.

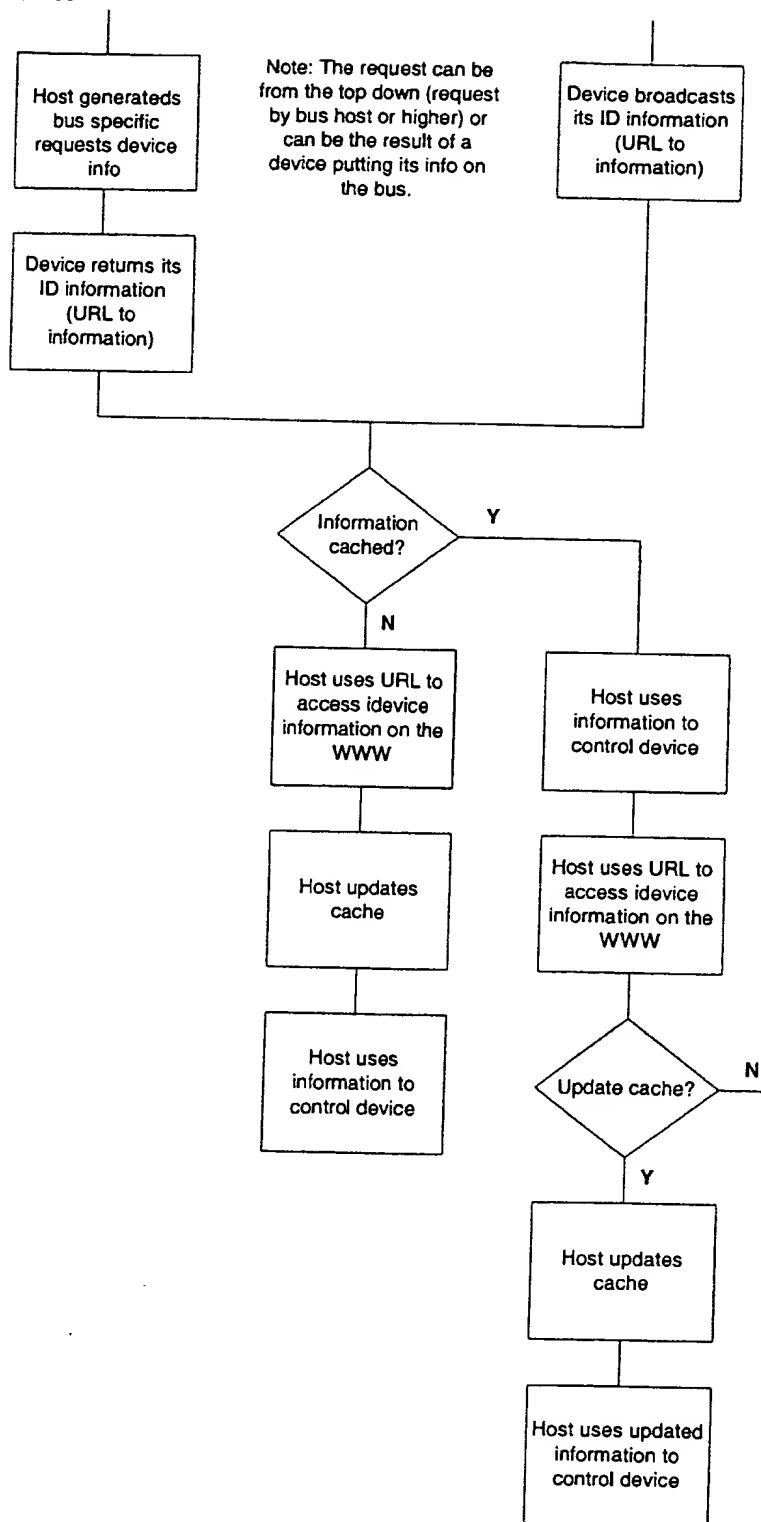At the core of this invention are two simple observations:
1. All a device has to do is to provide a small amount of information (URL) to a more complex device or system that can proxy for it.
2. The WWW provides an ideal place to keep a distributed repository of device specific information that can be readily accessed with a very simple identifier (URL).

The result is that rather than placing complex and expensive requirements on every device, the invention moves the complexity elsewhere to reduce the device's cost and complexity. There is another benefit because the URL allows a manufacturer to correct bugs or update a device's description. The concept can be extended to include device firmware to be upgraded silently and automatically with NO user intervention.

2.   Describe advantage(s) of your invention over what is done now.

Today, UPnP is seen as the mechanism to provide uniform device information that will allow devices to be discovered and to return sufficient information about their interface and function for remote control. However, this is done at considerable expense including dollars, complexity, power and real estate. For some classes of devices that already use a powerful microprocessor to connect the device the intra/internet this can be done for a relatively small cost adder. But for most other classes of devices with a lower level of complexity, adding this functionality may be prohibitive. This invention strikes a balance allowing a system to discover these less complex devices AND still have the capability to get complete information. In addition, it allows this information to be updated by the manufacturer. In one implementation, the implementation can actually make a very simple device look to the operating system as a full-fledged UPnP device even though is contains no microcontroller at all.

3.   YOU MUST include at least one figure illustrating the invention.
        If the invention relates to software, include a flowchart
        or pseudo-code representation of the algorithm.

```
┌──────────────┐        Note: The request can be      ┌──────────────┐
│ Host generateds│       from the top down (request     │Device broadcasts│
│ bus specific  │       by bus host or higher) or       │ its ID information│
│ requests device│      can be the result of a          │ (URL to        │
│ info          │       device putting its info on      │ information)   │
└──────┬───────┘        the bus.                        └───────┬──────┘
       │                                                        │
┌──────┴───────┐                                                │
│ Device returns its│                                           │
│ ID information │                                              │
│ (URL to        │                                              │
│ information)   │                                              │
└──────┬───────┘                                                │
       │                                                        │
       └────────────────────────────┬───────────────────────────┘
                                     │
                               ╱─────┴─────╲        Y
                              ╱ Information  ╲──────────────┐
                              ╲  cached?     ╱              │
                               ╲─────┬─────╱                │
                                     │ N                    │
                           ┌─────────┴──────┐    ┌──────────┴────┐
                           │ Host uses URL to│    │ Host uses     │
                           │ access idevice  │    │ information to │
                           │ information on the│  │ control device │
                           │ WWW            │    └──────────┬────┘
                           └─────────┬──────┘               │
                           ┌─────────┴──────┐    ┌──────────┴────┐
                           │ Host updates   │    │ Host uses URL to│
                           │ cache          │    │ access idevice │
                           └─────────┬──────┘    │ information on the│
                                     │           │ WWW            │
                           ┌─────────┴──────┐    └──────────┬────┘
                           │ Host uses      │          ╱────┴────╲     N
                           │ information to │         ╱ Update cache?╲───────
                           │ control device │         ╲          ╱
                           └────────────────┘          ╲────┬───╱
                                                            │ Y
                                                 ┌──────────┴────┐
                                                 │ Host updates   │
                                                 │ cache          │
                                                 └──────────┬────┘
                                                 ┌──────────┴────┐
                                                 │ Host uses updated│
                                                 │ information to │
                                                 │ control device │
                                                 └────────────────┘
```

This flow chart illustrates how the device supplies its URL (ID info) to the host so it can be translated info about the devices interfaces and function. The host functionality referenced can be done in done in either the bridge or gateway.

4.   Value of your invention to Intel (how will it be used?).

This invention will give Intel IP in the eHome space. It has value to white goods manufacturers and other low-cost appliance manufacturers for devices they manufacturer that are intended to interact with the eHome. Its use will require intelligent proxies (read PCs) to make simple devices to appear to provide full-fledged descriptive information. In one implementation it would

allow a device as simple as an X-10 light switch to return complete information about itself and act as if it was a fully compliant UPnP device.

5.   **Explain how your invention is novel. If the technology itself is not new, explain what makes it different.**

This invention is a novel use of URL (or other device ID) in a manner that allows simple devices to provide smart hosts with sufficient information to remotely get complete information about the device's capabilities and interfaces. It is better than UPnP in that it can return the same information, but will allow manufacturers to always return the latest device information rather than hard-coded information.

6.   **Identify the closest or most pertinent prior art that you are aware of.**

I am unaware of any indirect schemes to return significant device information from low-cost devices.

7.   **Who is likely to want to use this invention or infringe the patent if one is obtained and how would infringement be detected?**

This invention is likely to be used as part of the basic infrastructure in an eHome.

HAVE YOUR SUPERVISOR READ, DATE AND SIGN COMPLETED FORM OR FORWARD IT ELECTRONICALLY VIA E-MAIL TO INTENTION_DISCLOSURE_SUBMISSION

DATE: _____   SUPERVISOR: _____

BY THIS SIGNING, I (SUPERVISOR) ACKNOWLEDGE THAT I HAVE READ AND UNDERSTAND THIS DISCLOSURE, AND RECOMMEND THAT THE HONORARIUM BE PAID
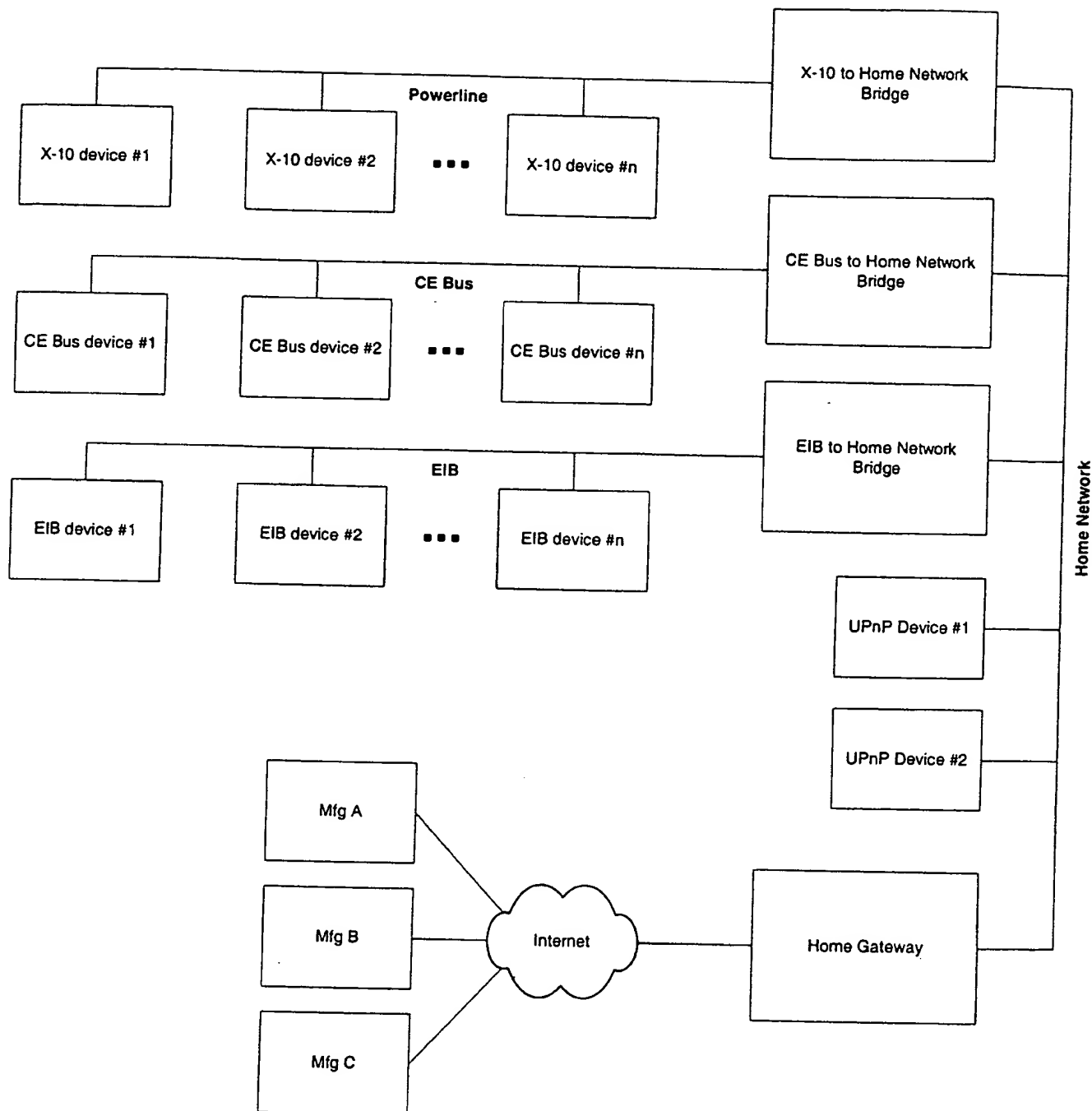
Figure describes whole system. Note there are 3 busses (X-10, CD Bus and EIB) that are used to connect a number of devices. Between each of these busses is a bridge to the Home Network. A gateway is used to connect the home network to the internet. The manufacturers of the devices on the various busses have an internet presence.

BLAKELY SOKOLOFF TAYLOR & ZAFMAN

A LIMITED LIABILITY PARTNERSHIP INCLUDING LAW CORPORATIONS

TELEPHONE (310) 207-3800

FACSIMILE (310) 820-5988
(310) 820-5270

BSTZ_MAIL@BSTZ.COM
WWW.BSTZ.COM

INTELLECTUAL PROPERTY LAW

12400 WILSHIRE BOULEVARD
SEVENTH FLOOR
LOS ANGELES, CALIFORNIA 90025-1030

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September 19, 2001

ATTORNEY-CLIENT PRIVILEGED
CONFIDENTIAL COMMUNICATION

Via Federal Express

Mr. Robert A. Dunstan
53489 NW Wilson School Road
Forest Grove, Oregon 97116

Re: U.S. Patent Application for:
        METHOD AND APPARATUS TO REMOTELY OBTAIN DEVICE
        CHARACTERISTICS FOR SIMPLE DEVICES
        Your Invention Disclosure No: 16997
        Our File No. 042390.P11892

Dear Bob:

Enclosed is a draft of the patent application stated above. Please carefully review the Application and associated drawings, making any necessary corrections directly on the draft. Additionally, please review the enclosed document entitled *"Important Information Which Must Be Considered Prior To Filing A Patent Application In The United States"* for information on the inventorship and other issues.

During your review, please bear in mind that the description of the invention should be in sufficient detail such that a person skilled in the field of the invention can make and use the invention without undue experimentation. If you have any questions concerning this point, please do not hesitate to call. Another requirement necessary to obtain a valid patent is that the best mode known to the inventor for practicing the invention must be included in the description of the invention. Again, do not hesitate to call if you have any questions on this point.

Once you have completed your review, please forward the draft and associated drawings back to me in the enclosed self-addressed stamped envelope. A revised application will be prepared along with the necessary formal documents to permit us to file the application with the United States Patent and Trademark Office.

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
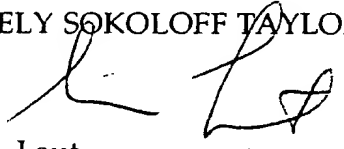
A LIMITED LIABILITY PARTNERSHIP INCLUDING LAW CORPORATIONS

Please respond as soon as possible, since this application is required to be filed by September 28, 2001.

If you have any questions regarding the application, please call me at your earliest convenience.

Very truly yours,

BLAKELY SOKOLOFF TAYLOR & ZAFMAN

Steven Laut

SL/lmd
Enclosures

**STEVEN
LAUT**
09/21/2001 01:43 PM

To: "Dunstan, Robert" <robert.dunstan@intel.com>
cc: Linda D'Elia/Bstz@BSTZ
Subject: RE: P11918 & P11892

Bob,

   I will get Linda working on doing that.

        Steve

"Dunstan, Robert" <robert.dunstan@intel.com> on 09/21/2001 01:38:44 PM

         "Dunstan, Robert" <robert.dunstan@intel.com> on
         09/21/2001   01:38:44   PM

To: Steven_Laut@bstz.com
cc:
Subject: RE: P11918 & P11892

Steven-
    These look fine. Do you want to email me the power to attorney and
assignment forms to sign, FAX and also snail mail to you? I'd really like
to get these off my desk.
-rad

-----Original Message-----
From: Steven_Laut@bstz.com [mailto:Steven_Laut@bstz.com]
Sent: Friday, September 21, 2001 10:57 AM
To: Dunstan, Robert
Subject: RE: P11918 & P11892

Bob,

    All concerns have been addressed and corrections have been made.
Regarding claim 7, you should look at claim 7 as a separate claim including
the broader independent claim, claim 6. Claim 6 stands by its self.
Claim 7, is just a narrower version of claim 6. The independent claim
covers ALL infringers without monitors. Claim 7 covers all infringers with
monitors. Therefore, there is no real concern as the independent claim,

claim 6, is what the Examiner will compare with any prior art. I also modified claim 7 by using "display" instead of monitor, which is broader.

Steve

(See attached file: P11892PatApp)(See attached file: patapp11918)

"Dunstan, Robert" <robert.dunstan@intel.com> on 09/21/2001 09:38:59 AM

To: Steven_Laut@bstz.com
cc:
Subject: RE: P11918 & P11892

Steve-
    P11918 looks OK except for a missing period in [0042] about 2/3 down after
the words "room / area".

    P11892 looks OK except
    inconsistent use of "e.g." and "such as" in parenthetical clauses in
[0019] and [0020] and throughout the rest of the application
    "such as cache memory)with" is missing a space between ')' & 'with' about
2/3 down in [0028].
    Claim 2 "...and a internet protocol..." The 'a' should be 'an'.
    Still concerned that Claim 7 "requires" a monitor be attached to the
system.

-rad

-----Original Message-----
From: Steven_Laut@bstz.com [mailto:Steven_Laut@bstz.com]
Sent: Thursday, September 20, 2001 3:30 PM
To: robert.dunstan@intel.com
Subject: P11918 & P11892

Hi Bob,

    Both of these applications have been through the QR process. I ended
up modifying the claims in P11918.

P11892 added the full citation to IEEE 802.11 & IEEE 1394 (page 6; An Intel requirement, even though all the patents I looked up in the industry, i.e., motorola, IBM, etc., cite as I originally did). I am attaching the latest. Once you approve of the applications, we can get the formal documents signed and file as soon as we receive the signed documents.

Steve

(See attached file: patapp11918)(See attached file: P11892PatApp)

Steven Laut, Esq.
Intellectual Property
Reg. Patent Attorney
Blakely, Sokoloff, Taylor & Zafman, LLP
12400 Wilshire Blvd., 7th Floor
Los Angeles, CA 90025-1026
Tel.:   (310) 207-3800 Ext. 756
FAX: (310) 820-5988
E-mail: steven_laut@bstz.com
Assistant: Linda M. D'Elia
Tel.:   (310) 207-3800 Ext. 721
Web site: www.bstz.com

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Steven Laut, Esq.
Intellectual Property
Reg. Patent Attorney
Blakely, Sokoloff, Taylor & Zafman, LLP
12400 Wilshire Blvd., 7th Floor
Los Angeles, CA 90025-1026
Tel.:   (310) 207-3800 Ext. 756
FAX: (310) 820-5988
E-mail: steven_laut@bstz.com
Assistant: Linda M. D'Elia

Tel.:   (310) 207-3800 Ext. 721
Web site: www.bstz.com

Steven Laut, Esq.
Intellectual Property
Reg. Patent Attorney
Blakely, Sokoloff, Taylor & Zafman, LLP
12400 Wilshire Blvd., 7th Floor
Los Angeles, CA 90025-1026
Tel.:   (310) 207-3800 Ext. 756
FAX: (310) 820-5988
E-mail: steven_laut@bstz.com
Assistant: Linda M. D'Elia
Tel.:   (310) 207-3800 Ext. 721
Web site: www.bstz.com